

REMARKS

Applicants wish to thank the Examiner for the careful consideration given this application. Claims 1-7 are pending in this Application.

Rejections under 35 U.S.C. § 103

Claims 1-7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,180,710 to Hergenrother et al. (hereinafter "Hergenrother") in view of Cruse. Applicants traverse this ground of rejection.

Hergenrother discloses the incorporation of inorganic salts into precipitated silica improving the filler dispersion in compounded rubber, including halobutyl rubber. See *Hergenrother, Abstract*. Hergenrother also discloses the further modification of the surface of silica with a silane and/or shielding agent with reactive groups to bind the silica to the rubber reactive groups via chemical bonds that include silane couplers including mercapto functionality. Cruse, on the other hand, discloses the use of sulfur silane coupling agents, including blocked mercaptosilanes, in the manufacture of rubbers compositions. Applicants respectfully submit that it is not obvious to add the sulfur silane coupling agents of Cruse with the technology disclosed in Hergenrother to achieve the present features of the instant claims. As noted, Hergenrother teaches modifying silica with inorganic salts at concentrations well in excess of the salt concentration found in commercial silica (Hergenrother, column 1, line 60-65) and preferably a silane or mercapto silane compound, whereas, Cruse discloses curing the non-butyl rubber with blocked mercaptosilanes. One skilled in the art would find no motivation in either reference to combine the two technologies and would not be motivated to use the blocked mercapto silanes of Cruse in curing halobutyl rubber briefly mentioned in Hergenrother.

At best, one skilled in the art would combine the references to modify the concentration of inorganic salt in the silica according to Hergenrother with blocked mercaptosilanes of Cruse. Moreover, there is no expectation of success of curing halogenated butyl rubber with the blocked mercaptosilanes of Cruse according to the teachings of Hergenrother even if such a combination was possible without other

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modifications to the system, which is neither hinted to nor disclosed in the references. As stated, the teachings in Hergenrother are directed to modifying silica surface to incorporate the silica into the rubber and not to cure the rubber composition. It is noted that a silane is a bifunctional molecule having a hydrophilic end and a hydrophobic end. The teachings of Hergenrother utilize the hydrophilic end of the silane molecules in combination with inorganic salt while the teachings of Cruse utilize the hydrophobic end of the blocked mercaptosilane molecules.

There is no indication in the references that using the blocked mercaptosilanes of Cruse would be successful in curing rubber, especially halobutyl rubber, compositions by utilizing the blocked mercaptosilanes to modify the surface of silica as set forth in Hergenrother. As such, one skilled in the art would neither be motivated to combine the references nor find a likelihood of success in combining the references to arrive at the features of instant claim 1.

The Applicants have shown in the previously filed response unexpected properties employing a blocked thiol modifier with a halobutyl rubber over that of non-halogenated rubber. Further, the Applicants add that Cruse is not even directed to butyl rubber. The described rubbers in Cruse do not include butyl rubber. *See Cruse, column 15, lines 17-54.* Butyl rubber is a rubber based on isobutylene and isoprene. This combination is not disclosed in Cruse. Hergenrother, on the other hand, does disclose butyl rubber and halobutyl rubber but does not disclose using a blocked thiol compound with these rubbers (it is further noted that a mercaptan (thiol) is not the same as a blocked thiol). Therefore, even if one were to combine the references, one still would not arrive at the features of the instant claims. The only motivation to use a blocked thiol compound with either a butyl or halobutyl rubber is found solely in the Applicant's own disclosure. Such a finding of motivation is impermissible. *See MPEP 2145.* As such, one skilled in the art would not find the instant claims obvious even if the references were combined.

The Office contends in point 6 that, "the halobutyl elastomer is not a deficiency in Resendes and as stated by the Examiner the motivation out of both references being direct to silica filled compositions." The Applicants are somewhat confused here since

“Resendes” is not the subject of the art cited in the rejection. Only Hergenrother and Cruse are the basis of the rejection. However, the point that the Office makes with regard to the motivation being drawn from the fact that the references are directed to silica filled compositions is not on point. As stated, there is no combination of Hergenrother with Cruse that discloses all the features of the instant claims, i.e., a halobutyl elastomer with a blocked thiol compound. Therefore, there would have to be found in the references a teaching that would motivate one skilled in the art to combine the teachings of Cruse with Hergenrother to arrive at all the features of the instant claims to render the claims obvious. There simply is none. Cruse does not even disclose butyl rubber, therefore, there is no motivation to use the blocked compounds found in Cruse with butyl rubber. Nor is there any indication in Hergenrother to modify its compounds to employ a blocked compound with butyl elastomers. As stated, the only motivation is found in the Applicants disclosure. Therefore, the Applicants believe that one skilled in the art would not find the instant invention obvious over the cited references alone or in combination.

In view of the foregoing remarks, Applicants submit that the pending Claims are in condition for allowance and respectfully request notice to such effect. Should the Examiner have any questions regarding the current claimed invention, he is invited to initiate a telephone conference with the undersigned.

The USPTO is hereby authorized to charge any fees for an extension of time or those under 37 C.F.R. 1.16 or 1.17, which may be required by this paper, and/or to credit any overpayments to Deposit Account No. 50-2527.

Respectfully submitted,

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